

FEATURES

- High switching capacity: 10 A 277V AC**
- High insulation resistance between contact and coil**
 - Creepage distance and clearances between contact and coil: Min. 6 mm .236 inch (In compliance with IEC65)
 - Surge withstand voltage between contact and coil: 10,000 V or more
- High noise immunity realized by the card separation structure between contact and coil**

- Popular terminal pitch in AV equipment field**
- Space-saving slim type**
Base area: Width 11 × Length 24 mm
Width .433 × Length .945 inch
- Conforms to the various safety standards**
UL/CSA, VDE, TÜV and SEMKO, SEV approved

SPECIFICATIONS

Contact

Arrangement	1 Form A	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	Max. 100 mΩ	
Contact material	AgSnO ₂ type	
Rating (resistive load)	Nominal switching capacity	10 A 277 V AC, 5 A 30V DC
	Max. switching power	2,770 V A, 150W
	Max. switching voltage	277 V AC, 30 V DC
	Max. switching current	10 A (AC), 5A (DC)
	Min. switching capacity ^{#1}	100 mA, 5 V DC
Expected life (min. operations)	Mechanical (at 180 cpm)	2 × 10 ⁶
	Electrical (at 20 cpm) (at rated load)	10 ⁵

Coil

Nominal operating power	530 mW
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^{#1} This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

Remarks

- * Specifications will vary with foreign standards certification ratings.
- ^{#1} Measurement at same location as "Initial breakdown voltage" section.
- ^{#2} Detection current: 10mA
- ^{#3} Wave is standard shock voltage of ±1.2 × 50μs according to JEC-212-1981
- ^{#4} Excluding contact bounce time.
- ^{#5} Half-wave pulse of sine wave: 11 ms; detection time: 10 μs
- ^{#6} Half-wave pulse of sine wave: 6 ms
- ^{#7} Detection time: 10 μs
- ^{#8} Refer to "6. Usage, Storage and Transport Conditions" in [AMBIENT ENVIRONMENT](#) section in [Relay Technical Information](#).

Characteristics

Max. operating speed	20 cpm (at rated load)	
Initial insulation resistance ^{*1}	Min. 1,000 MΩ (at 500 V DC)	
Initial ^{*2} breakdown voltage	Between open contacts	1,000 Vrms for 1 min.
	Between contact and coil	4,000 Vrms for 1 min.
Initial surge voltage between contact and coil ^{*3}	Min. 10,000 V	
Operate time ^{*4} (at nominal voltage)	Max. 15 ms (at 20°C 68°F)	
Release time (without diode) ^{*4} (at nominal voltage)	Max. 5 ms (at 20°C 68°F)	
Temperature rise (at 70°C)	Max. 45°C with nominal coil voltage and at 10 A contact carrying current (resistance method)	
Shock resistance	Functional ^{*5}	Min. 200 m/s ² {approx. 20 G}
	Destructive ^{*6}	Min. 1,000 m/s ² {approx. 100 G}
Vibration resistance	Functional ^{*7}	10 to 55Hz at double amplitude of 1.5mm
	Destructive	10 to 55Hz at double amplitude of 1.5mm
Conditions for operation, transport and storage ^{*8} (Not freezing and condensing at low temperature)	Ambient temp.	-40°C to +70°C -40°F to +158°F
	Humidity	5 to 85% R.H.
	Air pressure	86 to 106 kPa
Unit weight	Approx. 12 g .42 oz	

TYPICAL APPLICATIONS

- Audio visual equipment
TVs, VTRs
- Office equipment
LBP, CRT
- Home appliances
Refrigerator, Air conditioner

ORDERING INFORMATION

Ex. LKP 1a F — 12V

Contact arrangement	Protective construction	Coil voltage(DC)
1a: 1 Form A	F: Flux-resistant type	5, 6, 9, 12, 18, 24V

UL/CSA, TÜV, SEMKO, TV-5 approved type is standard.

Notes 1. Standard packing Carton: 100 pcs. Case: 500 pcs.

2. 5 V, 9 V, 18 V DC types are also available. Please consult us for details.

LK-P

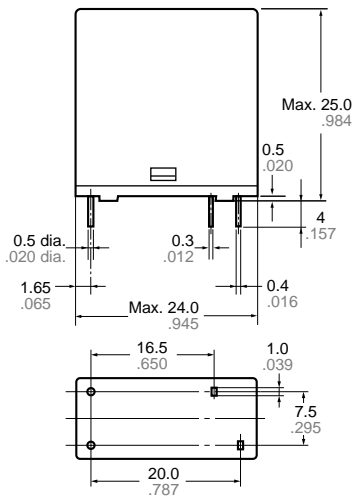
TYPES AND COIL DATA (at 20°C 68°F)

Part No.	Nominal voltage, V DC	Pick-up voltage V DC (max.) (Initial)	Drop-out voltage V DC (min.) (Initial)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating current, mA ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC (at 20°C 68°F)
LKP1aF-5V	5	3.5	0.5	47	106.4	530	6.5
LKP1aF-6V	6	4.2	0.6	68	88.3	530	7.8
LKP1aF-9V	9	6.3	0.9	153	58.8	530	11.7
LKP1aF-12V	12	8.4	1.2	272	44.2	530	15.6
LKP1aF-18V	18	12.6	1.8	611	29.5	530	23.4
LKP1aF-24V	24	16.8	2.4	1,087	22.1	530	31.2

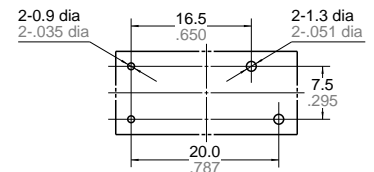
DIMENSIONS (mm inch)

Download [CAD Data](#) from our Web site.

CAD Data

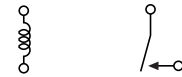


PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm .004$

Schematic (Bottom view)



Dimension:

Max. 1mm .039 inch:

1 to 3mm .039 to .118 inch: $\pm 0.2 \pm .008$

Min. 3mm .118 inch:

General tolerance

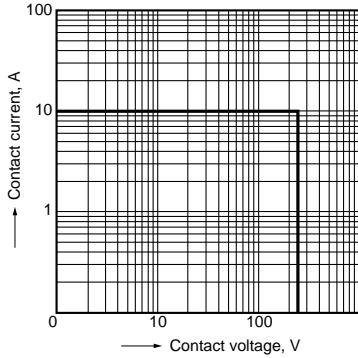
$\pm 0.1 \pm .004$

$\pm 0.2 \pm .008$

$\pm 0.3 \pm .012$

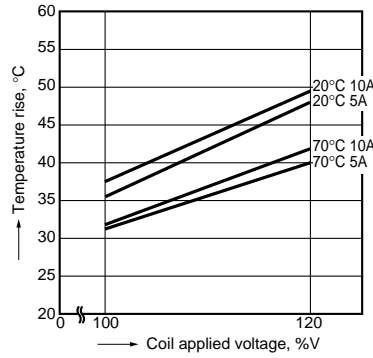
REFERENCE DATA

1. Max. switching power



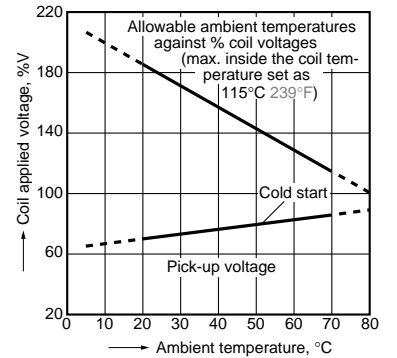
2. Coil temperature rise

Sample: LKP1aF-12V, 6 pcs.
Point measured: coil inside
Contact current: 5 A, 10 A



3. Ambient temperature characteristics and coil applied voltage

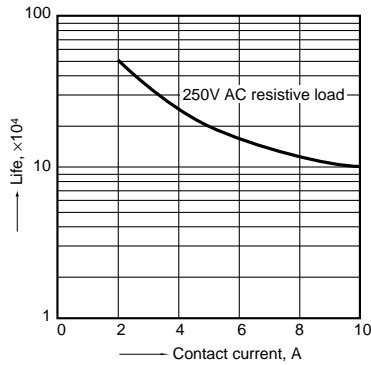
Contact current: 10 A



4. Life curve

Operation frequency: 20 times/min.
(ON/OFF = 1.5s: 1.5s)

Ambient temperature: room temperature



5. Electrical life test

(10 A 277 V AC, resistive load)

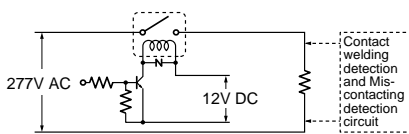
Sample: LKP1aF-12V, 6 pcs.

Operation frequency: 20 times/min.

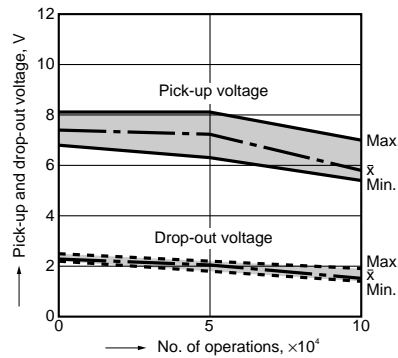
(ON/OFF = 1.5s: 1.5s)

Ambient temperature: 20°C 68°F

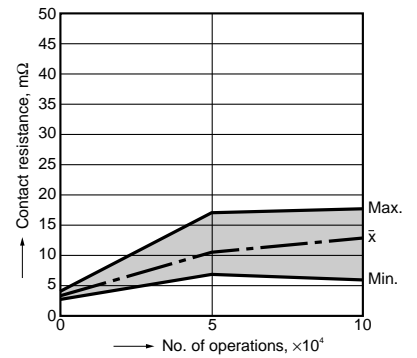
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance



SAFETY STANDARDS

UL/C-UL (Recognized)		CSA (Certified)		VDE (Certified)		TV rating (UL/CSA)		TÜV (Certified)		SEMKO (Certified)	
File No.	Contact rating	File No.	Contact rating	File No.	Contact rating	File No.	Rating	File No.	Rating	File No.	Contact rating
E43149	10A 277V AC 5A 30V DC	LR26550 etc.	10A 277V AC 5A 30V DC	4001439 0	10A 250V AC (cosφ=1.0)	UL E43149 CSA LR26550	TV-5	B 09 05 13461 262	10A 250V AC (cosφ=1.0) 5A 30V DC (0ms)	807779	3/100A 250V AC 5/40A 250V AC 10A 250V DC

For Cautions for Use, see [Relay Technical Information](#).